

## Closing in on Closure

# T Plant passes ORR... prepares to treat K Basins sludge

A specially trained team at T Plant has passed a rigorous Operational Readiness Review (ORR) conducted by the Department of Energy's headquarters, and now stands ready to treat the first radioactive sludge to be removed from the K Basins. Treatment is expected to begin within the next few weeks.

The T Plant team received glowing reviews from DOE in the ORR that was conducted in September. "The ORR team was impressed," stated the report "that the focus of preparations was on actual startup of the sludge treatment process and not on getting ready for a review... Operations personnel were noteworthy in applying conduct of operations principles... were well trained, confident and proficient... Line management demonstrated a clear awareness of

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### ORR report, DOE Headquarters

their responsibility for safety... [and] senior management was a constant presence... personnel at all levels for this project have a comprehensive knowledge of [the process]... the operators developed both a sense of ownership for the process and an intimate familiarity with the equipment... [We found] expert operator knowledge. [and] strong ALARA [As Low As Reasonably Achievable] practice."

According to Kent Smith, operations director for Fluor Hanford's Waste Storage and Disposal (WSD) Project, "I have never seen a team better prepared. As the time for the ORR approached, they knew that the real objective was to be ready to safely and efficiently operate the sludge treatment process. They weren't just trying to pass a test, they were determined to master the operating systems and start operations. It's gratifying that the DOE ORR



Among T plant personnel earning praises for their focus on process startup during the ORR were Radiological Control Technicians pictured (top), who are setting up air sampling equipment, and Nuclear Chemical Operator Art Zavala, seen operating the mixing station (center and bottom).

team recognized that preparedness in its report. We're all extremely proud of the T Plant team."

About three and one-half cubic meters of sludge from the North Loadout Pit (NLOP) of the K East Basin now sit in T Plant. This sludge, slightly less radioactive than much of the other K Basins sludge, was removed from the East Basin beginning in June 2004. It is now stored in four Large Diameter Containers (LDCs) in T Plant.

During preparations for the recent ORR, DOE Richland Operations Office Manager Keith Klein visited T Plant, dressed out in personnel protective clothing and a respirator along with the operators, and walked through the process. Later, he thanked the T Plant crew for its "help in familiarizing me with the NLOP sludge processing equipment and operations... Suiting up, talking with you and other T Plant folks, and walking the canyon deck left me with a much better feel for the challenges you face... Thanks again for your dedication to getting work done safely."

Treatment essentially consists of mixing small amounts of the liquid sludge with a special cement called grout, and allowing the grout to dry and harden, immobilizing the sludge. The mixing will occur inside 55-gallon drums, staged inside a shielded station installed on the deck of the T Plant canyon. All steps of the transloading, mixing and drying processes will be conducted under controlled conditions to minimize radiation dose to workers and assure that only small, measured amounts of sludge are moved and handled at any given time.

"The amount of sludge that goes into each drum will be carefully controlled," said Dale McKenney, Fluor Hanford vice president of WSD.

Nuclear chemical operators (NCOs) Ben Hovely, Sherry White, Art Zavala, and David Williamson were involved in developing procedures and designing equipment beginning last spring, when they went to vendor shops to handle and comment on partially fabricated treat-

*T Plant.... Continued on page 4*

**T plant** (Continued from page 3.)

ment equipment. Over a period of about six months, they and radiological control technicians Mark Watkins and Jason King, along with supervisor Wayne Moore offered suggestions on the design of the mixing station, including its valving, shielding and access ports.

"Getting a chance to play with the equipment at the vendor shop," says Hovely, "was a pretty great deal. It allowed us – the people who will be doing the work – to figure out the best places to stand, the location and size of the valves, and the way to break down the procedures into steps that will work best."

White adds that "the whole planning effort was a good example of ISMS [Integrated Safety Management Systems]. There was good team involvement between management and workers, and as a result I felt totally ready to use the procedures and operate the equipment." At the vendor shop, NCOs practiced with a water and gravel simulant designed to imitate the consistency of sludge.

At T Plant, long-time process crane operators Mike Yencopal and Wayne Gentry will begin the treatment sequence by lifting off the multi-ton concrete cover blocks and then carefully lifting the first LDC out of the cell and onto the canyon deck. Yencopal and Gentry, who have 50 years of work experience at Hanford between them, operate the crane from inside a cab whose bottom is 40 feet above the canyon deck. Each operator is so skilled that he can literally pick up a

dime with the "jaws" of the sometimes temperamental 67-year old crane.

Once an LDC is positioned into its overpack next to the batch tank and mixing station, operators will carefully pump a small amount of sludge from the LDC into a drum inside the station. Radiation readings will be taken automatically as the sludge is pumped. A nomogram developed by Pacific Northwest National Laboratory

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***Pete Knollmeyer  
KBC Vice President***

will tell the operators how much radioactivity is present, when to stop the pumping, and how much grout to mix with each batch so that the final drum contents are kept within specifications qualifying it as contact-handled waste (i.e., below 200 millicuries per hour on contact).

The mixture will then be stirred inside the drum for about 30 minutes with a "sacrificial blade" – a blade that will be disconnected and left inside the sludge/grout mixture. The idea for "sacrificial blades" was developed as a way to reduce the chance of contamination spreads. After the mixture is stirred, a lid will be put on top

of the drum, which will be left to dry for about one day, and then removed to an interim storage location at T Plant. Later, the drums will be assayed at Fluor Hanford's Waste Receiving and Processing (WRAP) facility, and then stored at the Central Waste Complex in the 200 West Area to await final disposition.

The entire NLOP sludge drying program is expected to take four to six months, with about four drums per day being treated. The NLOP sludge will result in about 300 drums of waste.

"We're ready to go," said T Plant manager Bob Wilkinson. "We have a lot of important missions at T Plant, and even larger missions coming at us in the next few years. We view this sludge treatment mission as something that we can do well, and we can accomplish as a cleanup victory for the whole Site."

Pete Knollmeyer, Fluor Hanford vice president for the K Basins Closure Project, thanked T Plant and the entire WSD Project for "bringing their expertise in waste handling to bear.... They are the experts in waste treatment, management and storage, so it was very gratifying that they stepped up and took on this challenge and are making it work for the benefit of all of us. It certainly shows company-wide teaming."

Treatment will prepare the sludge for disposal, based on the constituents of the treated waste and the acceptance criteria of potential disposal facilities. In the interim, the drums of treated sludge will be stored at T Plant. ■